

Just the Facts About ...

# Noise Control Through Planning and Design

Noise, or unwanted sound, can be an unwelcome by-product of our built environment, seriously degrading the "quality of life" in our residential, business, and mixed-use communities. Obviously, the most effective method of controlling unwanted sound is to prevent it in the first place.

Noise can be prevented or controlled to reasonable levels by various design, location, and engineering measures, or a combination thereof. In this context, the design engineer, architect, developer, or contractor are essential in our abiding effort to ensure quiet communities. Likewise, the individual homeowner or businessperson should be aware of noise considerations when planning renovations or replacement of equipment.

Besides not contributing to the overall degradation of the community's "soundscape," proactive noise control has several practical benefits. It precludes delays in the plan review and permitting process and, of greater consequence, prevents the possibility of expensive re-location, retrofit, or additional noise attenuation measures if an ordinance viola-

tion is documented. What the successful designer, developer, contractor, or individual must do is ask the right questions. The answers are available through manufacturer's noise performance specifications, available noise attenuation equipment options and, if further engineering measures are necessary, the services of an accredited acoustic or noise control consultant.

Fortunately Montgomery County has a comprehensive Noise Control Ordinance that

provides the guidance necessary to frame those questions, in the form of simple performance standards. The ordinance may be viewed on DEP's web site, [askdep.com](http://askdep.com), by selecting "Noise Control" from the program index. The ordinance sets maximum allowable sound level limits, expressed as dBA (A-weighted decibels) and measured at the nearest receiving property line. "Receiving Property" is defined as any real property where people live or work. The standards



are further divided into residential and non-residential zones, and daytime or nighttime allowable levels. "Daytime Hours" are 7 a.m. to 9 p.m., Monday through Friday, and 9 a.m. to 9 p.m., weekends and holidays. As mixed-use zones are considered residential, the applicable standard is almost always the more restrictive residential standard of **65 dBA daytime** and **55 dBA nighttime** (the non-residential standards are slightly higher at 67 dBA daytime and 62 nighttime).

Several facts and observations will be useful in project planning and design:

Mechanical equipment that has a potential "duty cycle" of 24 hours or portions thereof, such as HVAC system components, fans, chillers, and stand-by generators, must meet the more restrictive nighttime standard. *Note: The ordinance does not recognize the term "emergency generator." Therefore, stand-by generators must meet the same standard as any other installation.*

Almost all mechanical equipment has noise emission data available from the manufacturer. That data must be expressed as dBA measured at a stated reference distance. Sound diminishes with distance at a known rate. Consequently, when the sound

level at a referenced distance is known, the level at any other distance may be calculated with reasonable precision. This is especially useful in determining equipment or facility placement (e.g. loading docks), or in the design of engineering controls. All calculations and assumptions should be submitted to the reviewing authority.

As a general rule for estimating noise emission, sound from a stationary source will diminish approximately 6 dBA with each doubling of distance (for example, if 75 dBA at 25', then 69 dBA at 50', 63 dBA at 100', and so on). Likewise, due to the logarithmic nature of the decibel scale, if two sources of equal sound intensity are placed in close proximity to one another, the net increase will be 3 dBA. However, if there is a difference of 10 dBA or more between the two, the lesser source will have no effect upon the overall level.

In summary, the basic question is: "Does this facility or piece of equipment, alone or in combination with other sources, meet the provisions of the Montgomery County Noise Control Ordinance?" Any doubts, they can be resolved using available performance data, standard calculations, and accepted engineering practices.

Eliminating potential noise violations at the planning and permitting stage will benefit all concerned by preventing protracted and costly compliance actions and/or expensive replacement or retrofits. For further information, please contact DEP at 240.777.7770 or by email: [dep.askdep@montgomerycountymd.gov](mailto:dep.askdep@montgomerycountymd.gov).

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